CLAIMS

[1] A biological molecule biochip that supports biological molecules between a first member and a second member, wherein

in either the first member or the second member, by forming a plurality of grooves in parallel in a face that makes contact with the other member, a plurality of spaces are provided that become reaction regions.

[2] A biological molecule biochip that supports biological molecules between a first member and a second member, wherein

by forming a plurality of grooves in parallel in faces of the first member and the second member where the two members contact each other, a plurality of spaces are provided that become reaction regions.

[3] A biological molecule biochip that supports biological molecules between a first member and a second member, wherein

in the first member, a plurality of linear convex portions are formed in parallel in a face that contacts the second member, and in the second member, a plurality of linear groove portions are formed in parallel in a face that contacts the first member that can fit together one-to-one with the linear convex portions, and

while the linear convex portions and the linear groove portions are fitted together, when the first member and the second member are made to contact each other, spaces that become reaction regions are formed between the linear convex portions and the linear groove portions.

[4] The biological molecule biochip according to any of claims 1 to 3, wherein a sample supply opening that supplies a sample to the reaction regions and a sample recovery opening that recovers the sample from the reaction region are provided, making possible communication between the reaction regions and the outside.

[5] The biological molecule biochip according to any of claims 1 to 3, wherein a substrate that constitutes at least either one of the first member and the second member is transparent silicon rubber or plastic resin such as polydimethylsiloxane or poly methyl methacrylate.

[6] A biological molecule biochip that supports biological molecules, having a biochip main body in which a plurality of linear reaction regions are provided in parallel.

[7] The biological molecule biochip according to claim 6, wherein a substrate that constitutes the biochip main body is transparent silicon rubber or plastic resin such as polydimethylsiloxane or poly methyl methacrylate.

[8] A biological molecule biochip provided with a reaction region that supports biological molecules between a first member and a second member that are put in contact, wherein at least either one of the first member and the second member is comprised of polydimethylsiloxane, and gas molecules are made to penetrate into the polydimethylsiloxane substrate.

[9] The biological molecule biochip according to claim 8, wherein coating is performed on the surface of the member comprised of polydimethylsiloxane.

[10] The biological molecule biochip according to claim 9, wherein the coating is a gas impermeable polymer.

[11] A method for producing a biological molecule biochip in which at least either one of a first member and a second member that are put in contact with each other is comprised of polydimethylsiloxane, and molecules are supported in a reaction region formed between the first member and the second member, the method comprising a step of maintaining the member comprised of polydimethylsiloxane under vacuum conditions, and a step of making molecules of a predetermined gas penetrate into the

polydimethylsiloxane substrate by supplying the gas into the vacuum atmosphere.

[12] A silicon resin surface modification method wherein, after performing an ozone contact process in which ozone is made to contact the surface of a silicon resin, a reducing agent contact process is performed in which a reducing agent is made to contact the surface of the silicon resin.

[13] The silicon resin surface modification method according to claim 12, wherein after performing the reducing agent contact process, a surface function modification agent contact process is performed in which a surface function modification agent is made to contact the surface of the silicon resin.

[14] The silicon resin surface modification method according to claim 13, wherein the silicon resin has polydimethylsiloxane (PDMS) as a main component.

[15] The silicon resin surface modification method according to any of claims 12 to 14, wherein the reducing agent is hydrogen peroxide.

[16] The silicon resin surface modification method according to claim 13 or 14, wherein the surface function modification agent is a silane coupling agent.

[17] The silicon resin surface modification method according to any of claims 12 to 14, wherein in the ozone contact process, the resin surface is treated with ozone for one to three hours at 0.8 g/h or more.

[18] A biochip reaction temperature controller provided with a temperature control portion that controls the temperature of a biochip provided with a fluid channel and a reaction region connected to the fluid channel, wherein

the temperature control portion is provided with a heat transfer block on which the biochip is placed, a Peltier element that makes contact with the heat transfer block, and a heating / heat adsorbing means that makes contact

with the Peltier element, disposed in order.

[19] The biochip reaction temperature controller according to claim 18, wherein a heater is provided that makes contact with the heating / heat adsorbing means.

[20] A biochip reaction temperature controller provided with a temperature control portion that controls the temperature of a biochip provided with a reaction region, wherein

when the biochip is configured with an injection hole in which a reaction fluid is injected, a reaction region in which the reaction fluid is reacted, a discharge hole that discharges the reaction fluid, a first fluid channel that allows communication between the injection hole and the reaction region, and a second fluid channel that allows communication between the reaction region and the discharge hole, provided on a substrate,

by providing a plurality of temperature control portions, a region that includes at least part of the first fluid channel and part of the second fluid channel is configured so as to be able to cool, and a region that includes at least the reaction region is configured so as to be able to heat or cool.